

Grafco®

A Graham-Field Brand



Laboratory Centrifuge Model GF614B User Manual

Read this manual before operating the GF614B Laboratory Centrifuge. Save this manual for future reference.

Note: The Grafco GF614B Laboratory Centrifuge complies with all requirements of UL standard 3101-2-20.

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IMPORTANT SAFETY GUIDELINES— **PLEASE READ BEFORE USE**

The safety statements presented in this chapter refer to the basic safety information that the operator of the centrifuge shall pay attention to and abide by. There are additional safety statements in other chapters or sections, which may be the same as or similar to the following, or specific to the operations.

⚠ WARNING: Indicates a potential hazard situation or unsafe practice that, if not avoided, could result in death or serious personal injury.

▲ Caution: Indicates a potential hazard or unsafe practice that, if not avoided, could result in minor personal injury or product/property damage.

Note: Provides application recommendations or other useful information to ensure that you get the most from your product.

⚠ WARNING: Important! Read and understand these instructions before installing or using the Grafco GF614B Laboratory Centrifuge. If you do not understand any part of these instructions, contact your medical professional or Graham-Field dealer for direction in the use of this product.

⚠ WARNING: For the safety of both the operator and service personnel, take care when handling substances that are known to be toxic, radioactive or contaminated with pathogenic microorganisms when using this centrifuge. When Risk Group II materials are used (as identified in the World Health Organization “Laboratory Bio-Safety Manual”), a Bio-Seal should be employed; contact your Graham-Field dealer to purchase this Bio-Seal. More than one level of protection must be provided in the case of materials of a higher group. The use of flammable or explosive materials as well as those materials which chemically react vigorously is prohibited.

⚠ WARNING: If components are damaged or missing, contact your Graham-Field dealer immediately. DO NOT use substitute parts.

⚠ WARNING: GF Health Products, Inc. assumes no responsibility for any damage or injury caused by improper installation or use of this product.

INTENDED USE

The **Model GF614B** is a continuous duty centrifuge designed for the small lab or doctor's office for the purposes of separating laboratory fluid; any other use is explicitly prohibited.

SUPPLIED EQUIPMENT

The following items come standard with each **Model GF614B** centrifuge:

Equipment supplied with GF614B	Quantity	Description
	1	Rotor, six-place fixed-angle
	1	User manual
	6	Tube holder, 75mm
	6	Tube holder, 100mm
	6	Tube holder, 125mm

OPTIONAL ACCESSORIES

The following items are optional accessories for the **Model GF614B** centrifuge. Please contact your Graham-Field dealer to purchase these accessories.

Optional accessories	Item Number	Description
	GF614B-75	75mm tube holder, package of 6
	GF614B-100	100mm tube holder, package of 6
	GF614B-125	125mm tube holder, package of 6

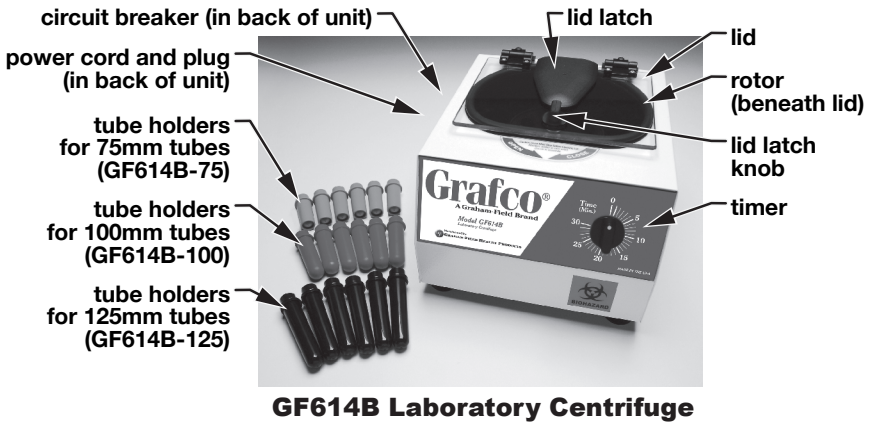
SETUP

Unpacking

1. Check for obvious damage to the carton or its contents.
If damage is evident, please notify the carrier and GF Health Products, Inc.
2. Unpack the centrifuge and verify that all of the supplied equipment is present (see **Equipment supplied with GF614B** list above).

Main features

Picture of GF614B with main features labeled follows.



Fixed-angle rotor for spinning 75mm, 100mm and 125mm test tubes in specially designed tube holders
Cool-Flow air flow design that prevents overheating of samples
Heavy gauge, durable steel construction
Lid safety switch that prevents the centrifuge from operating unless the lid is closed and latched
Removable rotor for easy cleaning
Brushless A/C motor
Transparent lid for observation of samples and optical speed calibration

Setup location

Choose a setup location which meets the following criteria:

- a) A bench top clearance height of 20" is required in order to open the lid.
- b) A clearance envelope (the space around the centrifuge required for safety) of at least 24" x 24" is required, with the centrifuge at the center. No person or hazardous material shall be permitted in the clearance envelope during operation. The operator time within the envelope shall be limited to the time necessary for loading, unloading and centrifuge operation only.
- c) Unencumbered air flow is required. Proper ventilation is necessary to prevent the overheating of samples as well as premature failure of the centrifuge.
- d) A flat, level surface is required on which to place the centrifuge. Secure the centrifuge to the operating surface by its four suction feet. No level adjustment is necessary.
- e) The power outlet must always be within reach as the power cord is the means of emergency disconnection!

Initial Setup

Note: If any problems are found during the initial setup procedure, refer to the Troubleshooting section. If you are still unable to solve your problem, contact your Graham-Field dealer for further assistance.

1. Plug the centrifuge's power cord into a properly grounded 115 Volt AC, 60 Hz electrical wall outlet.
2. Turn the lid latch knob counter-clockwise and open the lid.
3. Spin the rotor by hand; check for free and level rotation.
4. Close the lid. Rotate the lid latch knob clockwise to its complete stop position.
5. Turn the centrifuge on by turning the timer to 10 minutes.
6. Listen to the centrifuge. You should hear a smooth whirling sound.

Note: After the centrifuge has passed this procedure, it is ready for operation.

 Ensure that Centrifuge is installed as described before use.

Balanced Loads

▲ **Caution:** Your centrifuge must contain a balanced load in order to work properly. Spinning unbalanced loads may shorten the life of the device and produce unpredictable results. Observe the following rules when loading the rotor.

1. Opposing tube holders must be identical.
2. Opposing tube holders must be empty or loaded with equally weighted samples.
3. If an odd number of samples is to be spun, fill a tube with water to match the weight of the unpaired sample and place it across from the unpaired sample.

Special features

Lid Safety Switch: The lid is secured to the top of the cabinet by a latching knob and pawl system. When the knob is rotated clockwise, the pawl grips the underside of the cabinet opening and prevents the lid from opening. A mechanical stop positions the pawl and prevents it from rotating completely. When rotated to the stop position, the pawl makes contact with a microswitch mounted underneath the cabinet top. The lid safety switch prevents the centrifuge from operating while the lid is open.

Circuit Breaker: The Model GF614B has a 4 Amp circuit breaker at the rear of the base that disconnects power in the event of an overload, preventing the device from operating.

OPERATION

*Note: Follow the previous **Initial setup** procedure before initial operation.*

1. Ensure that the centrifuge's power cord is plugged into a properly grounded 115 Volt AC, 60 Hz electrical wall outlet.
2. Turn the latch counter-clockwise and open the lid.
3. Place the test tube samples into the tube holders. Be sure to follow the rules for balanced loads.
5. Close the lid and turn the lid knob clockwise to its complete stop position.
6. Turn on the device by turning the timer to the desired run time.
7. The centrifuge should begin to spin.
8. Once the timer reaches zero (0), the motor will stop and the rotor will coast to a stop. Do not open the lid until the rotor has come to a complete stop.
9. Turn the lid latch knob counter-clockwise and open the lid.
10. Remove the samples.
11. The centrifuge is immediately ready for operation.

MAINTENANCE

With proper care and maintenance your centrifuge will provide years of laboratory service. For proper care, always follow the maintenance instructions in this section.

⚠ WARNING: Electrical shock hazard: Do not open the case. Any disassembly of the device must be performed by a qualified service technician.

Provide Adequate Ventilation

Place the centrifuge on a hard smooth surface for good air circulation. For cooling purposes, the centrifuge draws in ambient air through the air intake cover on the top of the lid and exhausts this air in the rear of the base.

Spin Balanced Loads

Ensure that you always spin a balanced load. The Model GF614B has a unique counter-balanced motor-mount design which, along with its rubber suction feet, produces excellent vibration dampening. However, out-of-balance loads may break glass test tubes and/or produce unsatisfactory separation results. Proper load balancing will help to improve sample separation and extend the life of the centrifuge. Refer to earlier **SETUP/Balanced loads** section for additional information on balancing the load.

Keep the Tube Holders Clean

⚠ WARNING: NOTE: Always follow the safety guidelines of materials in the event that a substance known to be potentially toxic, radioactive or contaminated with a pathogenetic microorganism is spilled in or on the centrifuge. Small glass fragments left in the tube holder after a tube breakage may adhere to the next test tube inserted in that holder. When this tube is handled, these fragments may puncture protective gloves and lacerate the operator's fingers or hand. Remaining fragments may provide stress points on subsequent tubes and result in additional breakage.

If a tube breakage occurs, carefully remove the tube holder. Properly dispose of the sample and tube fragments and thoroughly clean both the inside and outside of the tube holder. Replace the tube holder in the rotor.

Motor and Electrical Maintenance: The Model GF614B uses a brushless A/C motor. The motor and electrical components should not need servicing for the life of the centrifuge.

Keep the Rotor Chamber Clean

Clean the rotor chamber every six months or whenever there is a tube breakage (refer to note #3). Instructions follow to remove and re-install the rotor.

To remove the rotor:

⚠ WARNING: Unplug the centrifuge from the electrical outlet at this time to reduce the risk of electric shock.

1. Open the lid.
2. Remove the test tube holders.
3. Remove the knob or nut in the center of the rotor by turning it counter-clockwise. A nut driver may be required.

4. The rotor sits on a cone-shaped adapter. Pull the rotor up and off of this adapter.

To install the rotor:

1. Place the rotor back onto the cone-shaped adapter. You may need to turn the rotor slightly to align it properly.
2. Slide the rotor onto the rotor cone (it should slide freely).
3. Once a proper fit has been achieved, replace the rotor knob or nut and turn it until it is hand-tight.
4. Replace the tube holders and ensure that they are seated properly.
5. Perform the **SETUP/Initial setup** procedure to ensure that the rotor has been installed correctly and that the centrifuge has not been damaged.

⚠ WARNING: Before cleaning, always unplug the power cord from the electrical outlet to reduce the risk of electric shock.

Clean the rotor chamber, rotor and accessories thoroughly using either isopropyl alcohol, soap and water, or bleach, with a clean towel or cloth.

Do not use fully or partially halogenated hydrocarbons, ketones, esters or any other chemicals not listed in the previous paragraph; they could damage the rotor and tube holders.

▲ Caution: Do not submerge the centrifuge in water or other cleaning solutions as this will cause damage and void your warranty!

Tube Holder Replacement

Replace the tube holders after 24 months of use or if damaged.

Calibration

(to be performed by a qualified service technician only)

For continued proper operation of the centrifuge, test every two years to ensure that the top speed is within specification (for top speed, see **SPECIFICATIONS** section).

Testing ground continuity and leakage current

(to be performed by a qualified service technician only)

⚠ WARNING: To reduce the risk of electric shock, test the ground continuity and line leakage every two years.

TROUBLESHOOTING

Problem	Solution
The rotor does not spin freely	Ensure that nothing has fallen into the rotor chamber If there is nothing obstructing the rotor, contact your Graham-Field dealer for further assistance
Excessive noise when the device is running	Ensure that the load is balanced Ensure that nothing has fallen into the rotor chamber Ensure that the nut in the center of the rotor is tight Possible faulty motor; contact your Graham-Field dealer for further assistance
The centrifuge does not run	Ensure that the centrifuge is plugged into a properly grounded 115 Volt AC, 60 Hz electrical wall outlet Ensure that the lid latch knob is turned completely clockwise to its stop position. If not, the centrifuge will not operate Ensure that the circuit breaker at the rear of the base, that disconnects power in the event of an overload and prevents the device from operating, is not tripped. If the switch is white, the breaker has tripped. Contact your Graham-Field dealer for further assistance

SPECIFICATIONS *

General Specifications for the Model GF614B Centrifuge

Rotor / Rotor Accessories	Rated for a rotation frequency of 3,500 RPM
	Capable of spinning test tubes up to 17mm x 125mm
Nominal Speed 125mm holders	3,150 (± 100) RPM
Nominal RCF 125mm holders	1,200 (± 80) xg
Nominal Speed 100mm holders	3,250 (± 100) RPM
Nominal RCF 100mm holders	1,080 (± 80) xg
Nominal Speed 75mm holders	3,300 (± 100) RPM
Nominal RCF 75mm holders	950 (± 80) xg
Maximum capacity	90 ml (6 x 15 ml) Maximum sample density is 1.15 grams / ml (water density = 1.0 grams / ml)
Overall Dimensions (H x W x D)	8.5 in. x 11 in. x 12.5 in. (215.9mm x 279.4mm x 317.5mm)
Weight	18.5 lbs. (8.41kg)
Centrifuge Motor	1/30 HP, A/C
Nominal Acceleration Time	45 seconds
Protection Breaker	4 Amp. re-settable
Timer:	mechanical, 1 to 30 minutes
	accuracy ± 10%
Current Requirement	1.0 Amps
Voltage Requirement	115 (± 10) Volts
Frequency	60 Hz
* Specifications are subject to change without notice	

WARRANTY

GF Health Products, Inc. warrants the Graeco Laboratory Centrifuge Model GF614B for a period of one year for defects in workmanship and materials. During the warranty period, defective items will be repaired or replaced at manufacturer's option at no charge.

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